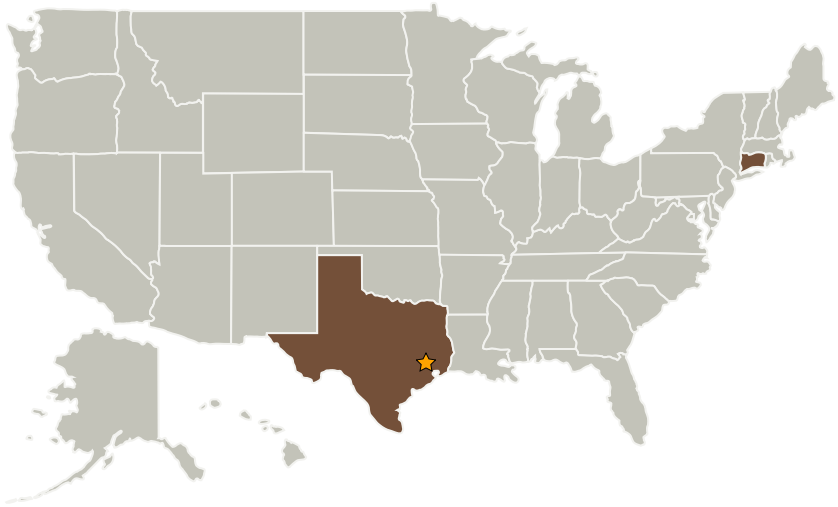
Panoramic Stereoscopic Video System for Remote-Controlled Robotic Space Operations, Phase II

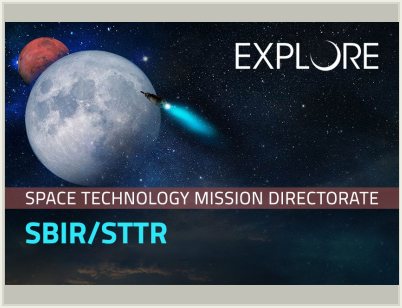
Completed Technology Project (2004 - 2006)

Project Introduction

In this project, the development of a novel panoramic, stereoscopic video system was proposed. The proposed system, which contains no moving parts, uses three-fixed position cameras equipped with NASA's Panoramic Refracting Optic (PRO) to generate stereoscopic images over a hemispherical work area. This system will provide an immersive remote environment for robot operation during space missions, enhancing operator effectiveness. In Phase I, a prototype imager was designed, constructed, and tested. This prototype was used to record stereoscopic images throughout its hemispherical viewing area. These tests demonstrated that the system can generate good stereoscopic views for any chosen viewing direction, thereby proving feasibility. In Phase II we propose to develop an advanced prototype system with an improved optical design that will enhance the system's imaging resolution. We also propose to couple the system with a head-mounted display, equipped with a head-tracking unit, to allow the user to effortlessly view the hemispherical workspace in three dimensions by simply moving his or her head. The Phase II project will therefore substantially increase the level of maturity of the Phase I innovation. The project will culminate in the delivery of the advanced prototype imaging system to NASA.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Completed Technology Project (2004 - 2006)

Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Advanced Fuel Research, Inc.	Supporting Organization	Industry	East Hartford, Connecticut

Primary U.S. Work Locations	
Connecticut	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.2 Extravehicular Activity Systems
    - TX06.2.3 Informatics and Decision Support Systems